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(54) **NESTABLE PACKAGES**

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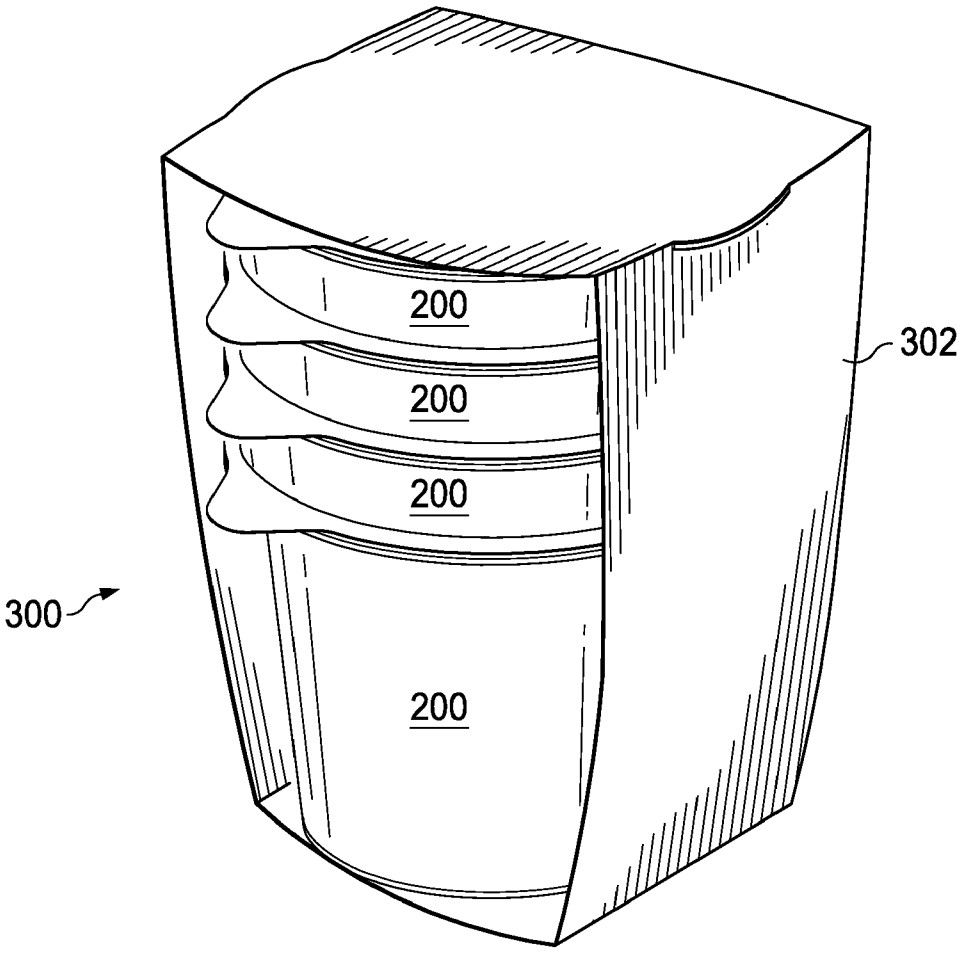
(57) **ABSTRACT**

A nestable food package, is provided. The food package has a base and a lid with a concave portion configured to receive the base of another food package.



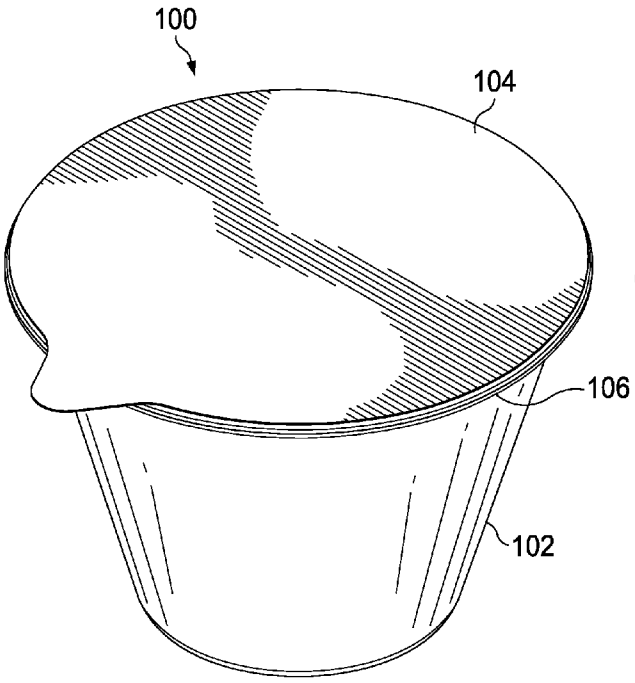


FIG. 1
(PRIOR ART)

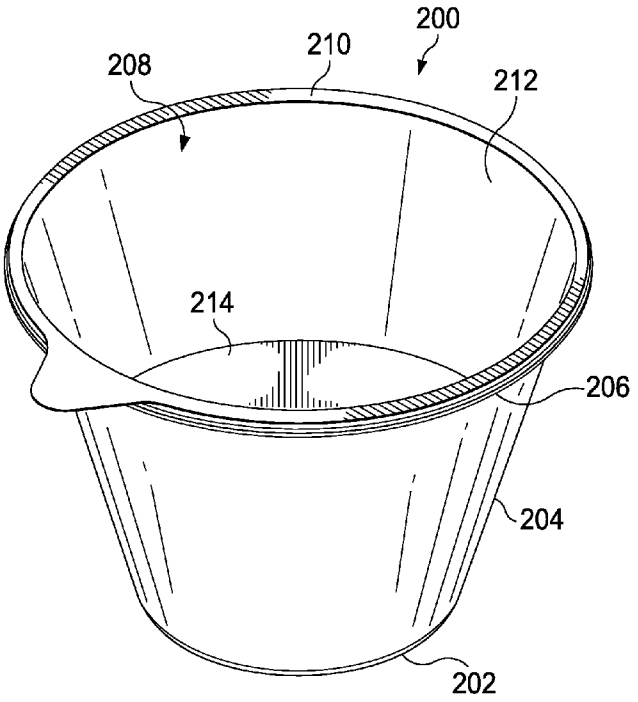


FIG. 2

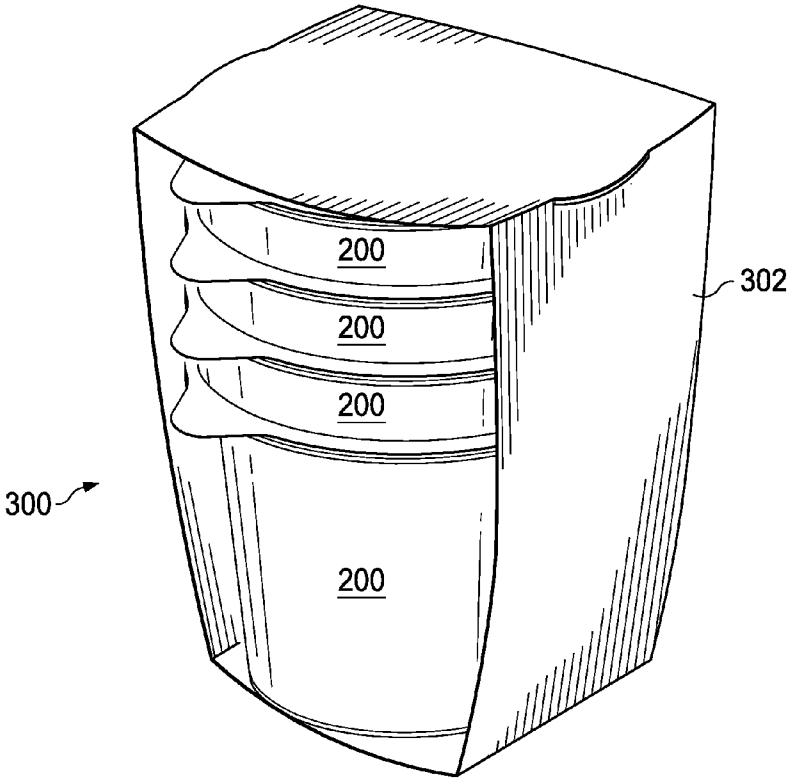


FIG. 3

NESTABLE PACKAGES

BACKGROUND OF THE INVENTION

[0001] 1. Technical Field

[0002] The present invention relates to packages that are nestable while a lid is in place, and method of making the packages.

[0003] 2. Description of Related Art

[0004] The food industry markets some food products in packages that comprise a base and a lid sealed onto the base. The base generally comprises a bowl or other liquid retaining shape with a rim, and a lid is typically sealed along the rim of the base. An example of such a known bowl is depicted in FIG. **1**. The bowl depicted in FIG. **1** comprises a base **102** and a lid **104** affixed to the base along the rim **106** of the base. Foods that are sold in such packaging include chili, soup, cheese sauce, salsa, dips, oats, oatmeal and other mixtures of solid and/or liquid food products. Foods that are packaged in this way are often consumed directly from the base after the lid is removed.

[0005] Additionally, many such packaged foods are intended to be consumed or cooked at elevated temperatures prior to consumption. Microwave ovens are commonly used to heat such food products. The microwave oven is an appliance that can be found in many homes and businesses. During operation, a microwave oven floods the cooking chamber with non-ionizing microwave radiation, usually at a frequency of about 2.45 GHz. Many food molecules (for example water molecules) are electric dipoles, which means they are positively charged at one end and a negatively charged at the other end. As the microwave radiation passes through the food, the dipole molecules rotate as they try to align themselves with the alternating electric field of the microwaves. This rotation and movement causes the food to heat up as the rotating molecules impact other molecules, putting them into motion. Microwave heating is highly efficient on liquid water (a relatively polar molecule), and much less so on fats and sugars (which are less polar).

[0006] However, heating food inside a food package described above with a water-containing food or food product inside can cause problems. Most such packaged foods are packaged with a "headspace." The headspace is the region between the food inside the food package and the lid. The headspace allows for room between the upper level of the food inside the package and the upper rim of the bowl to prevent spillover when the food is heated. The disadvantage to providing enough headspace to guard against spillover is that it increases shipping costs for the food container by reducing the density of both the food package itself and larger groupings or cartons of food packages.

[0007] The main solution to this problem in the prior art is to provide a food package with smaller headspace with instructions to the consumer to pour the food into a separate microwave safe bowl with adequate spillover protection before heating it in the microwave. This approach is problematic for several reasons. First, the consumer may not transfer the food as instructed because he or she did not read, forgot to follow, or chose not to follow the instructions provided. Second, the consumer is inconvenienced by this prior art solution.

[0008] Consequently, a need exists for a food product package that can be shipped with minimal headspace yet still heated in a microwave oven without causing spillover.

SUMMARY OF THE INVENTION

[0009] The present invention is a food package that is nestable with other food packages. In one embodiment, a food package comprises a base comprising a bottom, a sidewall and an upper rim; and a lid affixed to said upper rim, wherein said lid comprises a concave portion configured to receive a base of a second food package. In another embodiment, the concave portion of the lid is defined by a lid sidewall and a lid bottom. In another embodiment, the base comprises a circular cross section, wherein said base comprises a first circumference, and wherein said lid sidewall comprises a circular cross section and said lid bottom comprises a second circumference, wherein said second circumference is greater than or equal to said first circumference.

[0010] In one embodiment, one inventive food package is nested inside a concave portion of a second inventive food package. In another embodiment, the food package has a base bottom that is substantially coplanar with the lid bottom. In still another embodiment, the base sidewall and lid sidewall are substantially concentric. In another embodiment, the bottom is approximately circular.

[0011] In one embodiment, the base further comprises a base height defined as a distance between a plane defined by the base bottom and a plane defined by the base upper rim, wherein the lid further comprises a lid height defined as a distance between a plane defined by the lid bottom and the plane defined by the base upper rim, wherein the lid height is at least 25%, or at least 33%, or at least 45%, of the base height.

[0012] In one embodiment, the inventive food package is substantially the same size and shape as a second inventive food package.

[0013] In one embodiment of the invention, a method of packaging a food product is provided, comprising: providing a plurality of food packages, each said food package comprising: a base comprising a bottom, a sidewall and an upper rim; a lid affixed to said upper rim, wherein said lid comprises a concave portion configured to receive a base of a second food package; and an interior compartment defined by said base and said lid which contains a food product; nesting said food packages to form a food package bundle; and at least partially covering said food package bundle with a packaging sleeve.

[0014] In another embodiment of the invention, a food package bundle comprises: a plurality of food packages, each said food package comprising: a base comprising a bottom, a sidewall and an upper rim; and a lid affixed to said upper rim, wherein said lid comprises a concave portion configured to receive a base of a second food package; wherein said food packages are nested and wherein said nested food packages are at least partially covered with a packaging sleeve.

[0015] In another embodiment, each said food package is substantially the same size and shape as each other food package in said food package bundle.

[0016] The resultant food product package is relatively simple and inexpensive to manufacture, yet overcomes the problems in the prior art by allowing the food package to be shipped with less headspace and increased bulk density, yet still be heated in a microwave oven without allowing spillover. The above as well as additional features and advantages of the present invention will become apparent in the following written detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will be best understood by reference to the following detailed description of illustrative embodiments when read in conjunction with the accompanying drawings, wherein:

[0018] FIG. **1** is a perspective view of a prior art food package;

[0019] FIG. **2** is a perspective view of one embodiment of the package of the present invention;

[0020] FIG. **3** is a perspective view of several exemplary inventive packages nested together in a bundle.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] The present invention is directed towards a package that is nestable with other food packages in a bundle. The term "package" as used herein is used to describe a container having at least one wall that defines an enclosed interior portion. The term "food package" as used herein is defined as a package designed to contain food inside of it. The type of food package that usually stores food products intended to be heated in a microwave or consumed from a package having a cup or bowl shape comprises a sturdy, bowl-shaped base with a lid sealed to the rim of the base. However, the principles of the present invention in its broadest sense are applicable to any food package containing a food product.

[0022] Referring to FIG. **1**, therein is depicted a prior art food package **100** comprising a bowl-shaped base **102**, a lid **104** and a seal holding the lid **104** onto the base **102** along its rim **106**. The seal can be created using any heat-activated or pressure-activated sealant known in the industry, including polypropylene based sealants.

[0023] If the food package of FIG. **1** contains a food product intended to be heated in a microwave oven, it may fill approximately the bottom one-third of the package, leaving enough headspace that water can be added if necessary, such that the container walls can still guard against spillover during heating.

[0024] FIG. **2** depicts one embodiment of the food package of the present invention, and FIG. **3** depicts four such packages in nested configuration and held together by a sleeve.

[0025] The features of this embodiment are most clearly depicted in FIG. **2**. Therein is shown an inventive package **200**, with a base comprising a base bottom **202**, which is typically planar surface, or raised edge surrounding a planar surface, on which the food package rests when placed on a resting surface, and a base sidewall **204** extending upward from the base bottom **202**. In a preferred embodiment, a cross section of the base sidewall taken parallel to the base bottom surface will be approximately circular in shape, but other shapes are possible. The base sidewall defines a base upper rim **206** opposite the base bottom **202**.

[0026] FIG. **2** also depicts a lid **208** that allows packages **200** of similar construction to be nested in the lid **208**. This is accomplished by affixing to the base upper rim **206** a lid **208** that comprises a lid upper rim **210**, a lid sidewall **212**, and a lid bottom **214**. The shape of the lid sidewall **212** will preferably be substantially geometrically similar and concentric to the shape of the base sidewall **204**. For example, if a cross-section of the base sidewall taken parallel with the base bottom is a circle, a cross-section of the lid sidewall taken parallel with the base bottom will be a concentric but smaller circle. The lid bottom is preferably substantially parallel to the base bottom.

[0027] In the embodiment depicted in FIG. **2**, the lid bottom **214** is circular and comprises a first circumference, and the base bottom is also circular and comprises a second circumference. In this embodiment, the first circumference is greater than or equal to the second circumference. In a preferred embodiment, the first circumference is substantially equal to, if only slightly larger than, the second circumference, such that the outer edge of the base bottom is adjacent to the inner edge of the lid bottom throughout its circumference when one food package is nested inside the lid of another package.

[0028] In one embodiment, the base comprises a base height defined as the distance between the plane defined by the base bottom and the plane defined by the base upper rim. The lid comprises a lid height defined as the distance between the plane defined by the lid bottom and the plane defined by the base upper rim. In a preferred embodiment, the lid height is at least 25% of the base height. In a more preferred embodiment, the lid height is at least 33% of the base height. In a most preferred embodiment, the lid height is at least 45% of the base height.

[0029] In its broadest sense, the inventive food package comprises base and a lid affixed to the base, wherein the lid comprises a concave portion configured to receive a portion of a second base of a second food package when the second food package is nested inside the lid of the inventive food package. Preferably the nested food packages are substantially identical in shape.

[0030] FIG. **3** depicts a bundle **300** of nested food packages **200** constructed according to one embodiment of the present invention. In particular, a packaging sleeve **302** surrounds at least a portion of four nested food packages **200**. The packaging sleeve depicted in FIG. **3** is a substantially opaque sleeve formed of a material such as paperboard or a polymer film sheet. However, the packaging sleeve may be made of a "shrink wrap" polymer material, may be transparent or translucent, or may have graphics or text printed thereon.

[0031] When a plurality of food packages made according to the present invention are packaged as shown in FIG. **3**, the bulk density of the overall bundle can be increased substantially over the bulk density of prior art packages shown in FIG. **1** that are stacked on top of one another. Increasing the bulk density allows for substantial reductions in the shipping and storage costs for the packaged food products. In accordance with one embodiment of the present invention, a practitioner is able to double the weight of product packaged in a given volume by using the nested cups described and claimed herein.

[0032] The bundle shown in FIG. **3** is also an example of a "multi-pack" of food products sold in stores. The increased bulk density of this multi-pack also takes up less space in a consumer's cupboard or cabinet.

[0033] In a preferred embodiment, the base of the food package of the present invention is produced by blow molding or thermoforming a polymer resin into the desired shape. Preferred polymers include polyethylene and polypropylene, but may be any polymer or polymer blend that is compatible with a blow molding process. The bowl may also be injection molded, or fabricated from cardboard, paperboard or other cellulose or fiber-based process.

[0034] The lid of the present invention may also be made by thermoforming, blow molding, injection molding, or fabri-

cated from cardboard, paperboard or other cellulose or fiber-based process. The lid is preferably a thin polymer film that has been compression formed to provide the concave portion configured to receive the base of another food package.

[0035] The lid optionally includes a barrier layer, such as a metalized coating, or a graphics layer. The lid may also be a paper or metalized paper lid, or a metal foil lid. The lid is preferably affixed to the upper rim of the base with a sealant that allows a consumer to peel the lid off the container when it is desired to do so. Preferably, the sealant is a heat activated sealant. In one embodiment a heat activated sealant that can be used to affix the lid to the bowl is a low density polyethylene (LDPE)/high density polyethylene (HDPE) coextrusion, or a polypropylene/ethylene vinyl alcohol (EVOH) coextrusion. Alternatively, a pressure-activated sealant can be used.

[0036] The reduced headspace in the compartment defined by the bottom, inner sidewall and lid give the food package of the present invention several advantages over the prior art. First, the reduced packing density allows more food product and food packages to be stored and shipped in a given volume. This reduces per unit shipping costs, and reduces the amount of space the package occupies in commercial warehouses, store shelves, and consumer pantries. The reduced volume of gas contained inside the package can also help extend shelf life because there will be less oxygen contained initially inside the container available to contribute to food spoilation.

[0037] While this invention has been particularly shown and described the preference to the preferred embodiment, it will be understood by those skilled in the art that changes in form and detail may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. A food package comprising:
- a base comprising a bottom, a sidewall and an upper rim; and
- a lid affixed to said upper rim, wherein said lid comprises a concave portion configured to receive a base of a second food package.

2. The food package of claim **1** wherein said concave portion of said lid is defined by a lid sidewall and a lid bottom.

3. The food package of claim **2** wherein said base comprises a circular cross section, wherein said base comprises a first circumference, and wherein said lid sidewall comprises a circular cross section and said lid bottom comprises a second circumference, wherein said second circumference is greater than or equal to said first circumference.

4. The food package of claim **1** nested inside a concave portion of a second food package of claim **1**.

5. The food package of claim **2** wherein said base bottom is substantially coplanar with said lid bottom.

6. The food package of claim **2** wherein said base sidewall and said lid sidewall are substantially concentric.

7. The food package of claim **1** wherein said bottom is approximately circular.

8. The food package of claim **2** wherein said base further comprises a base height defined as a distance between a plane defined by the base bottom and a plane defined by the base upper rim, wherein the lid further comprises a lid height defined as a distance between a plane defined by the lid bottom and the plane defined by the base upper rim, wherein the lid height is at least 25% of the base height.

9. The food package of claim **8** wherein the lid height is at least 33% of the base height.

10. The food package of claim **8** wherein the lid height is at least 45% of the base height.

11. The food package of claim **4** wherein said food package of claim **1** is substantially the same size and shape as said second food package of claim **1**.

12. A method of packaging a food product comprising:
- providing a plurality of food packages, each said food package comprising:
  - a base comprising a bottom, a sidewall and an upper rim;
  - a lid affixed to said upper rim, wherein said lid comprises a concave portion configured to receive a base of a second food package;
  - an interior compartment defined by said base and said lid which contains a food product;
  - nesting said food packages to form a food package bundle; and
  - at least partially covering said food package bundle with a packaging sleeve.

13. The method of claim **1** wherein each said food package is substantially the same size and shape as each other food package in said food package bundle.

14. A food package bundle comprising:
- a plurality of food packages, each said food package comprising:
  - a base comprising a bottom, a sidewall and an upper rim;
  - a lid affixed to said upper rim, wherein said lid comprises a concave portion configured to receive a base of a second food package;
- wherein said food packages are nested and wherein said nested food packages are at least partially covered with a packaging sleeve.

15. The food package bundle of claim **14** wherein each said food package is substantially the same size and shape as each other food package in said food package bundle.

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